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Teaching the Teachers: A Case Study of GSS Training

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Introduction

This case study details the development and implementation of a thirty hour teacher training program to support the learning and application of Group Support Systems (GSS) technology in the classroom. Previous research suggests that despite demonstrable success, there are difficulties promoting the use of technology by teachers. The training program seeks to blend theoretical foundations of cooperative learning with use of the technology to support adoption and diffusion of GSS within the school.

Background

Davies (1971) classifies teaching paradigms into two distinct roles. In one role, the teacher as manager of the learning resources maintains centralized authority. In the other role, the teacher serves as a learning resource by being a guide, collaborator, and knowledge resource (Davies, 1971; Chin & Hortin, 1993). A teacher's centralized authority often fails to encourage student empowerment of the learning process. Cooperative learning approaches stress the importance of the teacher acting as guide, mentor, and coach (Johnson and Johnson, 1986; Slavin, 1991). The teacher as a mentor structures and guides in-class activities that encourage students to apply concepts to solve problems.

The introduction of technology in the classroom allows teachers to change how they deliver information and interact with students. Alavi (1994) argues the failure to engage students has been attributed to the over reliance on lectures to deliver education and that pedagogical change is supported through the application of technology in the classroom. She states, "Despite this belief, pedagogical practice has not yet fully integrated information technology (IT) into the curriculum and classroom activity, and computers remain greatly under-utilized in this context (p. 160)." The characteristics of the technology influence its ability to alter classroom interaction and student empowerment. Technologies such as computer aided instruction often only automate traditional classroom interactions and do not encourage the type of student collaboration advocated by cooperative learning.

GSS alter classroom interaction and uniquely support student collaboration and empowerment (Alavi, 1994; Brandt, 1995; Brandt & Lonsdale, 1996; Reinig, 1996; Walsh, Briggs, Ayoub, Vanderboom & Glynn, 1996). The features of GSS permit parallel contributions, group memory, and anonymous participation (Nunamaker, Dennis, Valacich, Vogel, & George 1991). Reinig (1995) argues that GSS provide an environment that supports a cooperative pedagogy. Research reveals that when used to enable student collaboration, the application of GSS in the classroom has produced significant gains in student satisfaction and performance (Brandt, 1995; Brandt & Lonsdale, 1996; Reinig, 1996; Walsh, et. al., 1996). This research describes experiences with individual or pairs of instructors. Despite reports of highly engaged students and increased participation, the process of changing the classroom experience through technology is limited to a few examples. Thus, Alavi's report of the under utilization of technology appears not only to be caused by the inability to identify the right technologies, but also by the inability to apply that technology appropriately when identified.

Rogers (1994) work in the diffusion of innovations presents research and strategies on the acceptance of new advances. Innovations, like the use of GSS in the classroom, succeed or fail based on how they are introduced, supported and applied. Training provides a means of controlling the interaction, presentation,

application, and language used regarding the innovation. In the area of secondary education, training takes on specific norms and requirements and offers opportunities to position the perception of GSS in the classroom and is the access point for teachers to learn both the technology and the collaborative teaching process.

In the educational literature, research examines the impact of training on professional development. Roy's (1996) research centers on the importance of training in communicating and supporting change in teaching and the application of technology to support collaboration. Concerning the role of training in the implementation of cooperative learning, Roy argues, "To ensure that cooperative learning fulfills its research promise, educators need to apply the components of an effective staff development program when designing ongoing, long-term activities that help teachers use cooperative learning effectively with students (p.3)".

The Case

This case study examines the process of teacher training and the role of training as it relates to the adoption of GSS technology into the high school classroom. The study focused on the training of a core group of thirteen high school teachers and three computer laboratory technicians at Cholla Magnet High School (Cholla) in Tucson, Arizona. The teachers represented diverse subject areas and a wide range of computer experience. The laboratory technicians were learning the software so they could provide technical support to the teachers. The participants voluntarily attended an intensive training course on the use of the GSS as a teaching tool. Consisting of thirty contact hours, the class qualified for two of the three credits required for the teachers to receive a merit pay increase.

Cholla is designated as the magnet school for law related and global studies in the Tucson Unified School District. The staff development was conducted in a facility specifically built to support the educational use of GroupSystems. The training consisted of fourteen two hour sessions held over a seven week period, as well as trainer supported time for each teacher to conduct one or more classes using the GSS. The training primarily focused on three GSS tools: Categorizer, Topic Commenter and Vote. The teachers were also exposed to the Survey tool when it was used to gather information from them as participants in the training. However, the goal of the training was to make the teachers proficient with a few tools, with the high probability of further training after their mastery of using those tools.

The teachers were introduced to the technology as 'students'. They participated in meaningful exercises that were designed to demonstrate the capabilities and power of GSS to support cooperative group interaction. The participants received minimal lecture on the technology and maximal hands-on involvement. Use of the various GSS tools were demonstrated through planning and executing lesson plans and class activities. The operation of the GSS was explained while the participants were directed through activities. After working as a group, the participants worked collaboratively in pairs to design GSS activities and lesson plans, one acting as teacher and the other as student in an alternating fashion. Detailed training guides were provided as reference materials and the teams were encouraged to consult the training guides for answers and instructions.

GroupSystems offers the facilitator (teacher) and the participant (student) different views. The teacher/student pairing was designed to help the teachers learn the software idiosyncrasies and to give each teacher knowledge of and familiarity with the distinction between the two views. In reality, as was our intention, the pairs of teachers collaboratively designed lesson plans, but when a team "walked through" their lesson plan, one controlled the activity from the teacher's perspective, while the other participated as a student. This allowed both participants to identify the multitude of details they needed to consider in designing their activities. The teachers also participated in several other activities including the following:

- an interactive presentation on the background of GSS and its educational use
- brainstorming ideas regarding how GSS could be used in the classroom and the benefits to students

- sharing their GSS lesson plans with the group and offering suggestions to others
- completing a survey on GSS
- a presentation and group discussion led by an experienced high school teacher who has over two years experience using GSS in her high school English literature class

While learning the intricacies of the system, the teachers were guided by the trainers, experienced as GroupSystems facilitators and researchers, to understand the benefits of a cooperative learning environment and taught methods to foster such an environment with GroupSystems. The approach of the training focused on the application of the tools to support the cooperative learning process. As teachers developed lesson plans to take into their classrooms, they were repeatedly encouraged to contemplate how their lesson plans would take advantage of the capabilities of the GSS to support group interaction.

Expectedly, the teachers had numerous questions regarding which tool would be most appropriate to accomplish certain goals in the classroom and the specific mechanics involved. In answering these questions, trainers took the opportunity to review lesson plan design and suggest possible modifications which would increase the use of cooperative learning concepts.

In one such instance, a teacher was creating a lesson plan based on a story that the class had recently read and discussed. The activity was designed so that each student would individually answer a series of questions about the story using the GSS, without the privilege to view other students' answers. By itself, this is an individual activity which does not incorporate cooperative learning. Recognizing that the original activity would fail to support student collaboration, the teacher modified the activity to take better advantage of the technology such that after each student completed the individual assignment, the entire class was given the privilege to view others' answers and discuss the responses in a cooperative manner via the GSS.

In educational applications, GSS offer unique support for collaboration that promotes and may initiate the utilization of cooperative learning techniques (Brandt, 1995). Consequently, training may provide the impetus for implementing a change in a teacher's educational paradigm. Cooperative learning shifts the teacher's role from the disseminator of knowledge to that of a guide on the journey of discovery in which the students are actively involved (Walsh, et. al., 1996). Although some teachers adopt this new role more easily than others, effective staff development can play a key role in this transition. To support the dual purpose of technology training and pedagogical change, the class involved more than just teaching about an innovative technology.

An educator will not progress from a few hours of training directly to implementation in the classroom (Roy 1996). Several other factors will effect the success of training and the focus of this case study incorporated many of these. Meeting twice a week for fourteen sessions, the staff development course provided the frequent and continuous training and practice needed to develop skill and confidence. The course also instituted cooperative learning techniques at several levels. Participants worked in pairs, teachers helped each other on an individual level, demonstrated lesson plans for the group with the group commenting and making suggestions regarding the lesson plans, and shared their experiences with GSS in their classrooms. Class time was also allocated to problem solving and sharing lessons learned.

In the post experience questionnaire, several measures were used to gain information on interest in using GSS in the classroom: class improvement, student response, effective student participation, projections of frequency of use and satisfaction with the tool. Twelve (out of thirteen possible) post experience questionnaires were collected from the teacher training class participants. The majority of responses were positive on all of these measures. The mean response reported on each measure was 4 or above on a 1 to 5 scale.

Methodology

The contact time with the teachers, both during the training classes and in supporting actual student classes, provided rich observations. We observed that for most of the teachers, their initial tendency when designing GSS class activities was to automate traditional classroom methods rather than to use the group support features of GSS. They were not utilizing the power of GSS. Instead, they wanted to automate the grading of exams or have the students do "individual" work online. Even after teachers realized this, it was hard for many of them to modify their plans and create cooperative learning activities. It is noteworthy that when surveyed, the teachers' statements of teaching philosophy espoused cooperative learning principles. The observations focus on the ability of the teachers to learn how to use the GSS tools, and their ability to devise cooperative activities. Interviews and survey data support the investigation of how the teachers adopt the technology over the course of the program and document changes in their perceptions. Long term contact with the teachers permits further data collection regarding individual interest in and use of GSS.

References Available Upon Request